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ABSTRACT

A study investigated the effects of two methods of teaching college level composition on writing development and, secondarily, the effects the two methods had on overall improvement by gender. The treatment method involved the same syllabus, texts, assignments, and workshop approach as the control method, with the exception of the independent variable--the treatment sections received eight class periods of 50 minutes each in guided peer group evaluation training and practice in revision. Participants included 65 college bound high school seniors. In both methods, the instructors discussed the assignment, analyzed suitable topics with the students in small groups, engaged them in prewriting activities, helped them develop strategies, and discussed an appropriate organization for the modes and aims under consideration before they had the students attempt a rough draft at home. The holistic and analytic scores of student pretests, assignments, and posttests agreed on four variables: (1) the instructors' performances were extremely even; (2) the treatment and control groups were reasonably close in ability; (3) the treatment (training and extensive practice in peer evaluation) had no noticeable power by itself over the control (no peer evaluation); and (4) the females outperformed the males. (HOD)

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By Itself Peer Group Revision Has No Power

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As Donald Murray has noted, published writers testify to the need for extensive revision as a necessary stage in their composing process.[1] Flanigan and Menendez have observed, however, that many student writers do not share this general agreement about the importance of rewriting: "Few students make extensive or substantive structural and conceptual changes; most just cosmetically rework mechanics and minor matters of form."[2] And as our understanding of the composing process increases during the current revival of rhetoric, we writing instructors seek new techniques (and re-examine some old ones) to move student writers as efficiently and quickly as possible to embrace and practice the successful behaviors of publisher writers. All too often, enthusiasm for the latest innovation, which may be an Aristotelian technique in modern dress, lets writing teachers assume that the method really works when in actuality it has little or no power to change student writing behavior or to improve writing ability.

Although lagging considerably behind interest in invention, research on revision, especially peer evaluation and self-evaluation, has grown in recent years: for example, see Emig,[3] Beach,[4] Dietrich,[5] Murray,[6] Sommers,[7] Bridwell,[8] Flanigan and Menendez,[9] and Faigley and Witte.[10] In many respect studies on self-provided and peer-provided feedback parallel interest in formal revision: see Moffett,[11] Elbow,[12] and Lamberg.[13] The number of presentations and workshops at regional and national NCTE and CCCC conventions has increased very rapidly in the last ten years and, one must assume, so has the number of secondary and college students who now receive either peer evaluation or self-

evaluation or both in addition to the traditional teacher evaluation.

The effectiveness of such evaluation methods, however, has not been conclusively demonstrated. In fact, two studies have found that despite teachers' best efforts, student revisions do not improve final drafts[14] and perhaps "rewriting is a waste of time."[15] Those studies which investigate the effects of revision on final drafts[16] —and find a positive correlation—leave unanswered questions about the relationship between revision and qualitative improvement.[17] As yet there has been no comprehensive study on the effectiveness of peer evaluation by itself. The present study is designed to meet that need.

PURPOSE

The primary purpose of this study was to investigate empirically the effects two methods of teaching college-level composition had on writing development. A secondary purpose was to investigate the effects the two methods had on overall improvement by gender. The first method (control) involved the same syllabus, texts, assignments, and workshop approach as the second method (experimental or "treatment") with the exception of the important independent variable: the treatment sections received eight class periods of 50 minutes each in guided peer group evaluation training and practice in revision. The other variables (teachers and student gender) were controlled as far as possible in order to highlight the possible significance of the treatment.

The following hypotheses were tested:

1. The treatment group will show a significant improvement in writing ability as measured by holistic and analytic scores on pre and posttests.
2. The control group will show significant improvement in writing ability as measured by holistic and analytic scores on pre and posttests.
3. The net gain in writing ability (change across time) of the treatment group will be significantly greater than the net gain of the control group as measured on pre and posttests.
4. Gender will be a significant factor within each group's net gain in writing ability as measured on pre and posttests.

One important assumption was made, that changes in writing ability (if in fact any took place) could be analyzed and quantified by disinterested, trained theme graders who did not know the purpose of the study.

The students participating in the study were 65 twelfth-grade Indiana high school students who, as college-bound seniors, were enrolled in the University's standard Elementary Composition One course. Of the 75 students who initially enrolled in sections of the study, 88 percent (n = 65) completed the 16-week course, a figure well within the 80-90 percent completion rate for college-bound seniors taught at off-campus sites between 1976 and 1981. Four sections participated in the study with two instructors each teaching one control and one treatment section. The sections averaged 16 students, with the smallest containing 12 and the largest 20 students. Of the 65 students who completed the study, one was Hispanic, the rest Caucasian.

Both instructors graded the treatment and control sections with the identical grading score sheets and, they trust, in the same manner; they met once for grading practice.

The students in the study perceived themselves as being above the average of the graduating class in ability and preparation for three reasons: (1) only 35-40 percent of all high school graduates in east-central Indiana go on for any type of post-secondary education, (2) over 90 percent of the students in optional high school writing courses are college bound, and (3) 100 percent of the students in optional college courses taught at high school sites were college bound. Because all students were bound for college and between their 17th and 18th birthdate at the start of the study, the four categories established for analysis were treatment versus control, male versus female.

PROCEDURES

Both instructors were resident college English faculty: one had 15 years of college-level composition experience and the Ph.D in English; the other, six years and the M.F.A. in Creative Writing. About six years ago both instructors became interested in peer group evaluation and have used the method since then as an integral part of the Prewriting, Writing, and Revision Process: (1) examining the writing assignment and probable audience, (2) locating the topic for the paper, (3) gathering information from memory and external sources, (4) creating a design/outline, (5) writing the rough draft, (6) revising the rough draft/peer evaluation, (7) proofreading and making a copy draft, (8) working with the editor-in-chief/teacher

evaluation, and (9) correcting any remaining problems. The instructors employed the writing workshop approach with extensive class and small group discussion of topics, evidence, rough drafts, etc. The students wrote seven out-of-class themes in addition to an initial in-class diagnostic essay (pretest) and a final in-class exam essay (posttest). The pre and posttests had comparable topics and identical instructions.

Following Mellon,[18] O'Hare,[19] and Kerek,[20] the instructors had one control and one treatment write on Topic A for the pretest and on Topic B for the posttest; conversely, the other control and treatment section wrote on B for the pre and A for the posttest. Because this method had worked successfully for the large sentence-combining study at Miami University (Ohio) in 1976-77, it was followed rather closely. Only one student of the 65 in the study had any difficuly in handling either topic. The pre and posttest each consumed two class periods, which gave the treatment group ample opportunity to apply their acquired revision skills. All students appeared motivated to do well on the tests because they knew in advance that a wretched diagnostic (pre) would mean disenrollment in the course and that the final essay (post) counted for one-tenth of the course grade.

The traditional toss-of-the-coin technique placed a given section in control or treatment. As a result of "heads" equals One, the larger section of Instructor One and the smaller of Instructor Two became "treatment" (n = 35) whereas the smaller of One and the larger of Two became "control" (n = 30) to balance the number of participants.

With due dates spaced approximately every two weeks for the seven out-of-class themes, the instructors had time to discuss the assignment, analyze suitable topics with the students in small groups,

engage them in prewriting activities, help them develop strategies, and discuss an appropriate organization for the modes and aim under consideration before they attempted a rough draft at home. One meeting in six for the treatment group was set aside for guided peer evaluation of rough drafts; the control group completed assigned homework from various classes during the comparable sixth session.

A 50-minute training period was provided for the treatment group before the students attempted to work on each other's paper. During the training period the instructor carefully analyzed/discussed with the students an anonymous student theme from the previous year, showing them how to evaluate the essay and comment on the revision guide. Since the instructor used an overhead projector and transparencies to conduct the pilot, many questions were asked and answered about the procedure. Thereafter, each peer evaluation session started with a discussion of revision objectives for the particular mode(s), and difficult terms were defined and demonstrated. Then the instructor and class warmed up by applying the revision guide to an anonymous student paper on a comparable assignment. After a 20-minute warm-up, the class broke into pairs, exchanged rough drafts with his or her partner, and wrote responses on the revision guide. The instructor assigned students to different pairs each time in order to spread out the strong and weak writers. Near the end of each session the papers with the completed guides were returned to their owners who then briefly discussed their reactions to each other's work. In order to increase student commitment to and involvement in peer evaluation, the guides were later collected by the instructor and graded for completeness and thoroughness. In earlier years this

investigator saw that perhaps one-third of the class became hasty and careless about the revision procedure because "It helps the other guy without helping me that much"; consequently, he started grading the revision guides and making them count collectively for, say, five per cent of the course grade. Thereafter, almost all students took the exercise seriously after the novelty wore off.

Each theme assignment had a special revision guide specifically keyed to the requirements of the aim and mode: for example, expressive aim/narrative mode. Each guide covered the same areas—organization of the evidence, development of ideas, style, and error reduction—but still focused on the dominant or primary traits of the specific aim and mode, using a modified "primary-trait" method suggested by Richard Lloyd-Jones.[21] The description guide in the Appendix was typical of the rest.

After the course was completed and before the pre and posttests were rated, the investigator carefully read all essays to locate and blackout references which might indicate months and seasons, and thus reveal to the raters that the essay was either pre or posttest. The essays were assigned random numbers to disguise their origin: pre or posttest, treatment or control, Instructor One or Two. Since the handwriting was almost always clear, the essays were not typed.

Three readers, all of whom had prior experience in Educational Testing Service (ETS) style essay rating, were trained and normed by the chief reader, who had 15 years of experience with ETS both as a reader and table/section leader and who was the chief reader for the large Miami University (Ohio) sentence-combining project. All readers were college professors at a neighboring university, and only the

chief reader knew the purpose of the project. The readers were trained on student themes on the identical essay topics from another research project completed in 1977. Therefore, all readings of the 130 essays were scored. Every rater read each essay twice: during the first day each essay was read holistically, using the well-known ETS scale of one through four with one being low and four high. On the second day each essay was read analytically, again using the one through four ETS scale, for content, organization, evidence, sentence maturity, and grammar/mechanics.

The criteria for the analytic reading were those on which the writing instructors graded essays and in which the student received instruction during the semester. Content is defined as the development of a paper with one controlling concept (thesis); organization, the development of material in a logical, sequential order; evidence, the use of facts, examples, and reasons to clarifiy and support the main ideas; sentences, the maturity and effectiveness of the syntax; and grammar, the use of conventional grammar, spellings, punctuation, and appropriate diction.

The inter-rater reliability for the three readers was determined by Pearson product moment correlation coefficient. For the holistic reading the correlation coefficients between Readers A and B = .68, A and C = .81, B and C = .94; for the analytic reading the coefficients between A and B = .81, A and C = .94, B and C = .83. Given the choice between forced reconciliation among divergent scores (which would generate artificially high coefficients) and unforced rater reactions (which reflect normal grading and consequently lower coefficients) this investigator chose the latter, which still produced acceptable coefficients.

FINDINGS

By using the same workshop approach, texts, handouts, grading standards, and assignments, the two instructors were able to achieve comparable performances. Data were subjected to an SPSS (1975)[22] Analysis of Variance (ANOVA) procedure; results indicated no significant difference between instructors on either holistic scoring ($F = .983$, $df = 1$, $p = >.60$) or analytic scoring ($F = .625$, $df = 1$, $p = >.49$). With a .05 a priori level of significance, it was readily apparent that there was no discernible difference between instructors.

The study contained 65 students: 35 treatment and 30 control. An SPSS ANOVA between groups found them fairly even.

/Insert Table 1 about here/

In a comparison of net change in mean scores across time (pre to posttest) for the two groups, the holistic and analytic scores produced conflicting results and cancelled each other out.

/Insert Table 2 about here/

Both groups made substantial gains across time as measured by both holistic and analytic scores, thus confirming Hypothesis One (experimental/treatment group will show improvement in writing ability) and Hypothesis Two (control group will show improvement in writing ability). However, the holistic scores indicate slightly better gains in the control group; the analytic scores reveal slightly greater gains in

the treatment group. Since the difference (0.03 versus 0.05) is so minuscule and the numbers so inconclusive, the data suggest that Hypothesis Three (the net gain in writing ability of the treatment group will be significantly greater than the net gain of the control group) must be rejected. The balanced equality in performance level of the groups came as a stunning and depressing surprise to an instructor so long committed to and enthusiastic about peer evaluation. After all, he had "demonstrated" the effectiveness of the technique at workshops at the national CCCC (1980) and at regional and state NCTE conventions. He was convinced that the treatment group would clearly outperform the control group—right up to the second the computer analyzed the data. So much for impressions and enthusiasms.

The study contained 36 females and 29 males. An SPSS ANOVA considered the difference in performance between males and females in the project; the results suggest some interesting and provocative implications for pedagogy.

/Insert Table 3 about here/

/Insert Table 4 about here/

Both holistic and analytic scoring agree that the only factor in the study which approaches statistical significance (alpha = .05) is gender: .065 on holistic and .082 on analytic. An examination of the admittedly rough measure of net change in mean scores across time reveals differences that suggest significance.

/Insert Table 5 about here/

Holistic and analytic scoring indicates that the females in the study did much better than the males, regardless of instructor or treatment/control grouping. Part of the variance may be explained by the higher "readiness factor" enjoyed by the females in the combined holistic and analytic pretest means (males = 6.91; females = 7.30). Nonetheless, the trend is clear and Hypothesis Four must be accepted: gender will be a significant variable within each group's net change in writing ability.

The analytic scoring considered content, organization, evidence, sentence maturity, and grammar/mechanics. A BMDP (1977)[23] procedure generated three-way ANOVAs and revealed that in Content both treatment and control groups gained across time, from pre to posttest, but that females made significantly larger gains ($p < .036$). In Organization the treatment group outperformed the control ($p < .054$) and the females outgained the males ($p < .054$). In Evidence both groups gained across time ($p < .044$) but the females gained more ($p < .087$). In Sentences both groups gained ($p < .031$) but the females performed better ($p < .014$). In Grammar both groups made some gains ($p < .117$) but again the females outgained the males ($p < .014$).

DISCUSSION

The holistic and analytic scores agree on four important variables: the instructors' performances were extremely even; the treatment and control groups were reasonably close in ability, as revealed by pretest scores; the treatment (training and extensive practice in peer evaluation) had no noticeable power by itself over the control (no

peer evaluation); and in late adolescence the females outperformed the males. The first two findings need no further comment.

Examination of the data suggests the conclusion that peer evaluation by itself may have little or no measurable power to increase writing ability—at least in typical college freshmen or in fifteen weeks. The study was purposely designed to eliminate as far as possible teacher evaluation between drafts; both instructors evaluated the polished draft in their normal manner, making some marginal notes and a terminal comment plus giving it a grade; students were not permitted to revise the polished draft beyond correcting blatant errors in usage, grammar, punctuation, spelling, and diction. The instructors never mentioned self-evaluation in name or practice, so students only used those revision skills they brought to the course from high school and those skills they, the treatment group, acquired in peer evaluation.

The results of this study are more cautionary than conclusive, more tentative than definitive because the data are essentially negative. However, the lack of demonstrably greater gains in the treatment group is in itself significant since most promoters of peer evaluation make powerful claims about its effectiveness when in fact it lacks measurable effectiveness, at least in the short term and with college freshmen. Why?

Four reasons suggest themselves. First, this investigator altered his normal practice of teacher evaluation/feedback between drafts, which may have led him in the past to believe that peer evaluation between drafts had considerable power, but for the study he eliminated teacher feedback between drafts to isolate peer evaluation. His previous enthusiasm may still be justified. Flanigan and Menendez

hypothesize that "teaching the complexities of the revision process demands all three kinds of evaluation—by peers, teachers, and self—and at all stages of the text's development, if students are to learn to evaluate and revise their writing for themselves."[24] Beach states, "The fact that the teacher-evaluation subjects showed significantly higher degree-of-change scores, fluency scores, and final draft support ratings than either self-evaluation or no-evaluation subjects indicates that between-draft teacher evaluation resulted in more revising than either the guided assessment or the usual practice of having students revise on their own."[25] It now appears evident that peer evaluation needs reinforcement from the individual and especially from the teacher at the between-draft stage to gain power or make a difference in writing ability. The situation may be analogous to air, water, and food: we need all three to survive.

Second, this study points out the lack of demonstrable short-term gains in peer evaluation by itself. "The preoccupation with short-term gains in writing ability is rather like the American business preoccupation with short-term profits—it can have harmful long-range consequences by distorting an enterprise."[26] It is entirely possible that peer evaluation/feedback/interaction may have considerable power to improve writing ability in the long run. This investigator vividly recalls his basic training in the Army. He (and about half of Baker Company) failed to achieve minimal marksmanship scores after 20 hours of instruction and five hours of firing range practice; one week after that dismal failure on the firing line, the investigator—with another four hours of instruction and no further practice—moved from unqualified marksman to top score sharpshooter. If a typical 18-year old cannot easily master so simple a physical task as firing a rifle after 25 hours

of instruction and practice, should we be surprised if the typical college freshman cannot master so complex a mental task as revising an essay with only eight hours of instruction and practice? The typical freshman has had about nine years of practice in composing but little or no practice in revising that writing. Perhaps writing teachers expect too much too soon in student revision, and only long-range studies can accurately assess the power of peer evaluation.

Third, the lack of measurable power in peer evaluation by itself should not lead writing teachers to abandon the technique. In 1978 and 1979 all students in all composition sections at this institution were asked to evaluate the effectiveness of the 20 different writing exercises/assignments they had completed during the semester: in 1978 (n = 164 students) peer evaluation was ranked first in perceived effectiveness, sentence combining a distant second; in 1979 (n = 181) sentence combining was first, peer evaluation a close second. The increased confidence it gives struggling writers, the development of voice, a larger awareness of audience, the shared experience—all of these benefits are so evident to the teacher (although often unmeasurable in post-tests) that to abandon peer evaluation would probably be unwise.

Fourth, the peer revision guides, based on the increasingly popular "primary-trait" scoring, are essentially product rather than process oriented: that is, the focus is on the evaluation of a text rather than on the reader's response, where the process of revision can transfer back to his or her own text. Unfortunately, there is too little research available on revision guides to suggest if open-ended, reader response guides are more effective than primary-trait guides.

The performance of the females in the study versus that of the males was a result readily anticipated. Research in cognition and human development has so often tested and demonstrated the social and verbal maturity (that is, advantage) adolescent females enjoy over males of the same age that there is little interest in it anymore. That the females did better was not unexpected; that they did much better was. But the explanation is not hard to find. The males in the study may have had as many years of exposure to language arts as the females, but the males were not as ready to benefit from a college-level writing course that stressed the workshop approach, small group interaction, interpersonal communication, and peer evaluation. The phenomenon of males making little or no progress, of almost getting worse as they acquire new skills, points to a lack of readiness in comparison to the females.[27]

More research needs to be undertaken to locate the proper balance between teacher, peer, and self-evaluation before the rough draft, between drafts, and after the polished draft, even though such studies may prove research labyrinths given the number of variables. More research is needed on the "readiness factor" of college freshmen to ascertain more clearly whether certain approaches to teaching composition discriminate against one sex. Finally, researchers need to replicate this study to provide more empirical data on peer evaluation by itself.

APPENDIX A: Pretest and Posttest Instructions

This in-class theme assignment lasts two 50-minute periods. You are encouraged to make full use of the allotted time for writing your essay. Today you will write the "rough" draft; at the next class period you will rewrite/revise/copy out the "smooth" draft. Please place your name on the back of the last page. Your instructor will collect your rough draft and topic sheet at the end of this period and return them next time.

TOPIC A

Each of us behaves differently when we move from one group to another. We play different roles in different situations. For example, we do not act at home precisely as we do on a date, in the classroom, or before an employer. Nor do we behave with a single friend as we behave with a group of friends.

In an extensive and detailed essay, develop your ideas about the changes in our behavior. Use specific illustrations from your personal experience, from observation of others, and from books, movies, and television. You may want to explore questions of your own or answer questions like these: Why do we act differently in different situations? Are the changes in our behavior motivated by some need? Are other people misled by our behavior changes? Do such changes indicate something insincere or hypocritical about us? What happens when we do not change our behavior from one situation to another?

TOPIC B

Each of us likes to escape from reality. We often make believe that our world is different than it is. For example, we imagine ourselves reigning as homecoming queen or serving as class president, scoring the winning touchdown or dating and marrying the most popular person in school. We identify with the heroes and heroines of adventure movies, romantic stories, science fiction, and athletic contests.

In an extensive and detailed essay, develop your thoughts about escaping from reality. Use specific illustrations from your personal experience, from observation of others, and from books, movies, and television. You may want to explore questions of your own or answer questions like these: Why do we escape? Is our desire to do so motivated by some need? Do you think that escape is irresponsible? harmful to ourselves and our society? necessary? beneficial? satisfying? Do we escape less often and less completely as we mature? What happens if we are unable to escape?

APPENDIX B: Revision Guide for Descriptive Essay

I. Organization

A. Evaluate the paper's opening sentences in terms of audience interest. Suggest alternative openings if interest is lacking.

B. What is the paper's main idea about the subject being described? Does the writer state this idea clearly somewhere in the paper? If not, where might such a sentence be inserted effectively?

C. Are the descriptive details easy to follow? Can you easily visualize the paper's subject? If not, suggest ways to recognize the details and/or to improve the transition from one detail to the next.

D. In each paragraph of the body, underline the sentence that seems to state its main point. If any paragraph appears to develop more that one point or major component of the subject, show it to the writer and suggest where indentation is needed for a new paragraph.

E. Evaluate the effectiveness of the paper's ending. Does the paper simply stop, or do the final sentences provide a sense of completeness and make the essay memorable? What other kinds of conclusions might work well here?

II. Development

A. Are all the descriptive details related to the paper's main idea? Point out any details that do not seem to support this idea?

B. In the margin of the paper, note the senses (sight, smell, touch, taste, sound) appealed to by each descriptive detail. Does the paper neglect any senses that are needed? On the paper, mark the passages that could be further developed by these sense appeals, and discuss them with the author.

C. Evaluate the completeness of the paper's description. Have any

important or interesting details been omitted? Is there some aspect of the subject you would like to know more about? List your suggestions for development.

III. Style

A. Does the paper use any clichés, overused expressions, in its description? List any you see and suggest changes in phrasing.

B. Are any sentences unnecessarily wordy? Mark these on the paper, and suggest ways to tighten the phrasing.

C. Circle the verbs and nouns in each sentence. Does the paper contain many vague or colorless words? List those below, and discuss other possible choices.

IV. Error Reduction

A. In what tense is the description written? Are there any unnecessary or distracting shifts from one tense to another? Mark any tense shifts you see and discuss them with the writer.

B. In what person is the paper written—first, second, or third? Are there any unnecessary or distracting shifts from one person to another? Mark any such shifts you see and discuss these with the author.

C. Note the punctuation of modifying words. Are two adjectives that act as a single-word modifier joined with a hyphen? Are commas and dashes used correctly? Put a check mark beside any punctuation you question , and ask your instructor for clarification if in doubt.

D. Bracket any questionable spelling and mark sp. near it.

V. Response

Use the remaining space to tell the writer what you liked best about the paper and what needs the most improvement.

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21. Richard Lloyd-Jones, "Primary Trait Scoring," in Evaluating Writing: Describing, Measuring, Judging, eds. Charles Cooper and Lee Odell (Urbana, IL: NCTE, 1977), pp. 33-66.

22. SPSS, Statistical Package for the Social Sciences, 2nd ed. (New York: McGraw-Hill, 1975).

23. BMDP, Biomedical Computer Programs, P series (Berkeley and Los Angeles: Univ of California Press, 1977).

24. Flanigan and Memendez, p. 256.

25. Beach, "Effects," p. 117.

26. Robert Narveson, the University of Nebraska-Lincoln. Note to the author, December 1981.

27. Mina Shaughnessy, Errors and Expectations: A Guide for the Teachers of Basic Writing (New York: Oxford Univ. Press, 1977).

TABLE 1

SPSS Analysis of Variance of Mean Holistic and Analytic Scores Between Treatment and Control Groups (error term within variance)

Source: btwn Groups	Sum Sq	D.F.	Mean Sq	F Value	Signif of F
Holistic Scores	0.322	1	0.322	0.974	.327
Analytic Scores	0.764	1	.0764	1.250	.725

p. $<$ .05

TABLE 2

Net Change in Mean Scores across Time (pre to posttest) Between Treatment and Control Groups

Group	Scoring	Pretest $\bar{X}$	Posttest $\bar{X}$	Net Change
Treatment	Holistic	2.32	2.50	+ .18
	Analytic	2.32	2.61	+ .29
Control	Holistic	2.48	2.80	+ .32
	Analytic	2.47	2.71	+ .24

TABLE 3

SPSS Two-Way Analysis of Variance of HOLISTIC SCORING by Sex by Group (Treatment versus Control)

Source of Variation	Sum of Squares	D.F.	Mean Square	F Value	Signif of F
Main Effects	1.458	2	.729	2.265	.112
Sex	1.135	1	1.135	3.528	.065*
Group	.262	1	.262	.813	.371
Two-Way Interaction	.088	1	.088	.272	.604
Sex X Group	.088	1	.088	.272	.604
Explained	1.545	3	.515	1.601	.198
Residual	19.627	61	.322		
TOTAL	21.173	64			

p. < .05

TABLE 4

SPSS Two-Way Analysis of Variance of ANALYTIC SCORING by Sex by Group (Treatment versus Control)

Source of Variation	Sum of Squares	D.F.	Mean Square	F Value	Signif of F
Main Effects	19.231	2	9.615	1.628	.205
Sex	18.467	1	18.478	3.126	.082*
Group	1.204	1	1.204	.204	.653
Two-Way Interaction	5.188	1	5.188	.878	.352
Sex X Group	5.188	1	5.188	.878	.352
Explained	24.419	3	8.140	1.378	.258
Residual	306.354	61	5.907		
TOTAL	384.773	64			

p. < .05

TABLE 5

Net Change in Mean Scores (Holistic and Analytic) Across Time by Group by Sex

Holistic Scoring

Group	Treatment		Control		Net Change in $\bar{X}$
Sex	Male	Female	Male	Female	Males
Pretest	6.36	7.23	7.38	7.41	Treat + .08
Posttest	6.44	7.95	7.50	8.75	Control + .14
					Females
					Treat + .75
					Control +1.34

Analytic Scoring

Group	Treatment		Control		Net Change in $\bar{X}$
Sex	Male	Female	Male	Female	Males
Pretest	6.60	7.14	7.30	7.44	Treat + .60
Posttest	7.20	8.17	7.20	8.47	Control - .10
					Females
					Treat + 1.03
					Control + 1.03